37 Lecture - PHY101

Important Mcqs

Who first proposed the idea of the particle nature of light?
a) Isaac Newton
b) James Clerk Maxwell
c) Albert Einstein
d) Niels Bohr
Answer: c) Albert Einstein
What is the name of the phenomenon in which electrons are emitted from a material when light of a certain frequency is shone on it?
a) Photoelectric effect
b) Compton effect
c) Diffraction
d) Interference
Answer: a) Photoelectric effect
Which experiment showed that X-rays scattered off a material have a longer wavelength than the incident radiation?
a) Photoelectric effect
b) Compton effect
c) Diffraction
d) Interference
Answer: b) Compton effect

What is the name of the concept that particles, such as photons, can exhibit both wave-like and particle-like behavior depending on the experiment?

a) Particle nature of light

b) Wave-particle duality
c) Photovoltaic effect
d) Coherent emission
Answer: b) Wave-particle duality

What is the practical application of the particle nature of light in photovoltaic cells?
a) Generating coherent beams of light
b) Creating population inversion in a material
c) Converting light energy into electrical energy
d) Scattering of X-rays

Answer: c) Converting light energy into electrical energy

How do lasers work?

- a) By creating a population inversion in a material
- b) By scattering X-rays off a material
- c) By converting light energy into electrical energy
- d) By exhibiting wave-particle duality

Answer: a) By creating a population inversion in a material

What is the name of the process by which photons transfer their energy to electrons in a material, allowing them to escape?

- a) Diffraction
- b) Interference
- c) Photoelectric effect
- d) Compton effect

Answer: c) Photoelectric effect

Which scientist discovered that light could exhibit particle-like behavior?

a) Isaac Newton

b) James Clerk Maxwell c) Albert Einstein d) Niels Bohr **Answer: c) Albert Einstein** What is the name of the beam of light created when excited atoms decay to the ground state, emitting photons with the same frequency and phase? a) Coherent emission b) Incoherent emission c) Photovoltaic effect d) Wave-particle duality Answer: a) Coherent emission What is the name of the concept that particles can exist in multiple states simultaneously? a) Particle nature of light b) Wave-particle duality c) Photovoltaic effect d) Coherent emission Answer: b) Wave-particle duality